Association for Information Systems
AIS Electronic Library (AISeL)

AMCIS 2005 Proceedings

Americas Conference on Information Systems (AMCIS)

2005

A Phenomenological Evaluation Framework for Cultural Heritage Interpretation: From e-HS to Heidegger's Historicity

Emmanuel Monod
Paris Dauphine University, emmanuel.monod@dauphine.fr

Heinz K. Klein
SUNY Binghamton, hkklein@binghamton.edu

A Phenomenological Evaluation Framework for Cultural Heritage Interpretation: From e-HS to Heidegger's Historicity

Emmanuel Monod
Paris Dauphine University (France)
and Georgia State University (USA),
emmanuel.monod@dauphine.fr

Heinz K. Klein
School of Management
State University of New York, Binghamton (USA)
and Invited Chair, ISI, Salford University, (UK)
hkklein@binghamton.edu

ABSTRACT

This paper is concerned with the potential of the most recent ICT developments for improving the interpretive mission of the archaeological and historical disciplines. This mission is to communicate the cultural heritage to the general public in cultural institutions like museums or archaeological sites (like for instance Ancient Olympia). We call the support of cultural heritage communication with ICT *"e-heritage systems."* In this paper we shall primarily focus on formulating evaluation criteria for e-heritage systems to fully exploit the communicative potential of ICT (as apposed to providing routine economic tracking and information retrieval functions). The purpose of this paper is to derive evaluation criteria for future e-heritage systems from Heidegger's phenomenological view of history in *Being and Time* and apply them to an example, i.e. the ARCHEOGUIDE System in Ancient Olympia.

Keywords

Heidegger's phenomenology, user requirements, systems evaluation, cultural heritage, archaeology, e-heritage systems, historicity, universality in uniqueness, re-enactment, embodiment, self-projection

1- INTRODUCTION

This paper is concerned with the potential of the most recent Information and Communication Technologies (ICT) developments for improving the interpretive mission of the archaeological and historical disciplines. This mission is to communicate the cultural heritage (Museums, Archaeological sites, libraries, documentation centers, …) to the general public in cultural institutions like museums or archaeological sites (for instance Ancient Olympia) (Fride, 1985 in *Encyclopaedia Britannica*). This is of great significance not just for local and global tourism, but also for building international political solidarity, which depends on much improved cross-cultural understandings at a global level. The purpose of the paper is to derive new criteria for the evaluation of past and the improvement of future systems of cultural heritage interpretation. The methodological approach of the paper is to pursue a phenomenological line of reasoning in analyzing the impact that e-HS *should* have on improving the user experiences when encountering cultural heritage attractions.

The problem of ICT user requirement determination is especially important for countries with extensive cultural tourism. Currently, these are mostly in Europe and South America, but the Near and Far East also offer great potential for cultural tourism. Indeed, the European Commission (Digicult, 2002) perceives ICT as an enabler for unlocking the economic value of cultural heritage. The European Commission calls the application of ICT to cultural heritage "e-culture". The Computer Applications to Archaeology research community (CAA 2004, ACM-VAST 2001) prefers the label "Virtual Heritage" or "Cultural Heritage Systems". However, both the European Commission and CAA community are heavily influenced by technological determinism (Markus and Robey 1988), because they have not proposed any frameworks for analysing the expectations of the users, i.e. the public visiting museums and archaeological sites. Even if the expectations of the users are acknowledged as important, they are not a direct object of research. Rather, a direct relationship between applying more ICT and better understanding of archaeology findings is assumed.

This raises two critical research questions.

> a) What framework could help to **evaluate information systems** (IS) by so that heritage interpretation can reap the potential benefits of modern ICT for both the archaeological research community and the general public interested in understanding the past?

b) What kind of fruitful theories and methodologies could **interpretive archaeology** provide for this evaluation of e-HS, which could meet and even exceed the expectations of the general public seeking inspiration and enlightenment from visiting cultural heritage sites?

The question of design of IS is out of the scope of this paper. However, the results of this evaluation framework might give insights for the design, but this would raise an extensive discussion about IS development methods. This framework is of course neither "objective" nor "universal". As we will see, interpretive archaeology is precisely against the mainstream in archaeology: the "processual" (objectivist-positivist) archaeology. Using Burrell and Morgan (1979) terminology, the framework we seek is rather "subjective" and therefore would fall into the "social relativism" paradigm. It is neither an epistemological or methodological framework, as the set of criteria for evaluating interpretive field studies (Klein and Myers, 1999). It is simply a focus on the user and on his needs when he seeks for understanding cultural heritage through information technologies.

The background of these questions is that neither the European Commission nor the publications on ICT applications in archaeology have paid attention to the new theories under development "***interpretive archaeology***" (Tilley 1993, Thomas 2000) and the latter has not yet discovered the relevance of ***phenomenology*** for cultural heritage interpretation.

On the other hand, in Information Systems (IS) research, an increasing numbers of papers have been published on using phenomenology for special types of analysis (e.g. Introna, 2002; Haynes 1999, 2002; Cass 1997) since this approach has been presented as an important for the discipline (Boland 1985, 1995). Most of these papers look upon phenomenology with an "inquiring system" perspective (Haynes 2002), which is especially suited for the description of social contexts and ethical issues. However, phenomenology of Heidegger in *Being and Time*, is also particularly well suited to the description of ICT user requirements.

With this in mind, the first purpose of this paper is to introduce a *theoretical basis for the formulation of user expectations* so that a new generation of e-HS will improve the communication of cultural heritage meanings to visitors (users). The second purpose is to point the way to an *appropriate research framework* for addressing visitor expectations by building on the insights from both interpretive archaeology and interpretive IS research. Before proceeding, we offer the following working definitions. *We call the application of IS to communicating cultural heritage "e-Heritage Systems" or e-HS.* We shall refer to e-Heritage Systems informed by the philosophy of hermeneutics and phenomenology as "***Interpretive Archaeology Systems***" (IAS). The strategic intent of our research is to promote a shift from the current e-Heritage systems to IAS. The research hypothesis underlying this paper is that the Heidegger's phenomenology is a preferred, yet much neglected basis for assessing the requirements of e-Heritage Systems, because it is particularly well suited to identify and describe *user requirements related to historical-cultural enlightenment experiences.* This is the reason why our research applies the concept of "*historicity" from* phenomenological and hermeneutic modes of analysis.

The paper first describes the e-HS users' requirements identified by the European Commission in section 2. The next section proposes a preliminary set of evaluation criteria from the recent interpretive archaeology literature. Section 4 extracts a preferred set of evaluation criteria from Heidegger's phenomenology of history in *Being and Time*. Section 5 attempts to capture the essence of interpretive archaeology and phenomenology concerns into an e-HS evaluation framework. This framework will then be applied to the evaluation of the ARCHEOGUIDE system in Olympia in section 6.

2- USER REQUIREMENTS FOR CULTURAL HERITAGE SYSTEMS

The European Commission considers cultural heritage sites a very important competitive asset for tourism (Museums, Archaeological sites, libraries, documentation centers). However, Europe does not use the potential of ICT as the USA has begun to do. A special European report is devoted to the potential use of ICT in cultural heritage: Digicult 2002. This report provides a list of user expectations from an online Delphi study. Some of these requirements do point out the considerable gap between user expectations and the current quality of interpretive aids, which most cultural heritage institutions would be able to provide (cf. exhibit 1).

– Applications to be user friendly, multi-lingual, providing full cultural information about the stored objects,
– Core information written simply and accessibly, without using jargons or making assumptions about prior knowledge,
– Quality and pertinence of the content,
– "Processes" rather than static artefacts,
– Increased interactivity,

– Fully documented collections presented in engaging ways, richer imaginative experiences, *– Ability to create personal collections and to surface resources in own working or learning environments,*

Exhibit 1 : User expectations for Cultural Heritage (Digicult European Report, 2002)

For example the phrases "*processes rather than static artefacts*" and "*richer imaginative experiences*" might well point to cultural-educational formative expectations reaching well beyond the description of the appearance of buildings and cultural objects from the past. The users might want to understand what they meant for the inhabitants of the distant past and we could learn from these historical meanings for our lives in our era, no less troubled than past eras. Maybe the European report has this in mind when it concludes that museums should move ***from*** their traditional function that is to *"relate people to objects by exhibitions"* ***to*** *"new digital challenges*" that is to *"provide new in-house or on-line experiences with networked media"* (Digicult, p. 85). However, the report's requirements are purely ad-hoc, following a naïve "what would you like to have" question and answer requirements approach, which has long been abandoned on IS research and practice. There is no framework of analysis or any kind of theory to call into question whether these requirements if met would bring about the expected benefits. In fact, there is no real understanding in the Digicult report of the potential benefits that the users could and should take with them beyond a shallow entertainment spectacle.

3- INTERPRETIVE ARCHAEOLOGY

The academic community in archaeology is also struggling with the issue of how to properly address user requirements. What should be the features of e-Heritage Systems (e-HS) so that they can serve as a real Interpretive Archaeology System (IAS)? What are the public requirements that it needs to meet? Starting with the issues raised in the Computer Applications to Archaeology (CAA, 2004) conference, one of the first questions to ask during the evaluation of the system is: does it *"translate (Heritage) into a story, even into an experience or a learning tool?"* (Plentickx 2004, p. 14). Also, does it *"enhance the visitor's experience and stimulate his interest for Heritage"* (Leboeuf 2004, p. 14)? These probing questions can be detailed further and answered by the supporting current shift in the theoretical debate in archaeology from '***processual'*** (positivist) archaeology to ***interpretive*** archaeology.

In mainstream archaeology, which is called processual and commonly acknowledged to be positivist, the object is strictly considered as a material one (White, 1959). This is consistent with "historical objectivity" (Ranke, 1957), which aims at showing *"only what has truly been"* (p. 4). This refers to the historian's commitment to divest himself of all personal preferences to *"extinguish my own self, as it were, to let the things speak and the mighty forces appear that have arisen in the course of centuries"* (p. 4). This is similar to the earlier objectivist perspective of historical "representation". It considers the past as the "vis-à-vis" (*Gegenueber) or* "stand-in " (*Vertretungen*) to which historical knowledge tries to correspond in an appropriate manner (Heussi, 1932).

Interpretive archaeology is a recent trend in archaeology that is opposed to the above objectivist-representational approach (Tilley 1993, Thomas 2000). The main four fundamental concepts of interpretive archaeology are re-enactment, embodiment, hermeneutics and phenomenology. In principle, these could serve as preliminary set of evaluation criteria.

- In the *re-enactment* perspective (Collingwood, 1946), the mission of the historian is to *"think himself into this action, to discern the thought of the agent"* (p. 213). Through "*a priori* imagination" (p. 241), the historian has a double task: to construct a coherent image and to *"construct a picture of things"* (p. 246) through an *"imaginary picture of the past"* (p. 248). Therefore, an historical event *"known historically, survives in the present"* (p. 225).
- The *embodiment archaeology* (Tilley 1994) has strong references to Merleau-Ponty (1962). Some of the objects presented to the public can provide a chance for a bodily experience of the past, like a walk to an ancient court house or temple.
- In *Hermeneutics* (Hodder and Hutson 2003), the social context in which the exhibited objects are embedded becomes central focus of interpretation and thereby the objects offer a chance for a reflexive experience of the past.
- Finally, there is an emerging reference to Heidegger's *phenomenology* in interpretive archaeology (Holtorf and Karlsson 2000). Building on this literature lead, it is our purpose to introduce the importance of Heidegger's views on historicity and then clarify its applicability to e-HS evaluation in practice.

4- THE PHENOMENOLOGICAL PERSPECTIVE ON HISTORY

Heidegger, in *Being and Time* (1953, 1996) also takes issue with the objectivist view of history. He compares Ranke's view of the history to a collector of facts similar as an antiquarian collection piece of furniture from past eras. He criticizes the positivist trend in historical science as a "*mechanistic kind of thinking"* (Heidegger, p. 367) "*At heart they are natural scientists and they become sceptics all the more because there are no experiments."* (p. 365). For Heidegger, these "representational" theories of history all focus on the differences between the "historical reality" and the possibility of a science of it. However, they do not grasp the ambiguity of the term history. They seem to recognize only one meaning of the word "history" like when we say, "*this already belongs to history*". In this figure of speech, the past is no longer objectively present or does not any more have an effect. But history has the opposite significance when we say "one cannot escape history" or that someone "makes history" and therefore will shape the future: "*Whatever 'has a history' in this way can at the same time 'make' history, in the sense of 'Epoch making' "* (p. 347). Finally, a fourth meaning of history is related to the conditions of human existence. In opposition to Nature, Humans are considered as beings possessing "spirit" and "culture". These last two meanings lead to the notion of historicity, which does not apply to the past of an animal or the history of tree.

Historicity is "*understanding of ourselves as historical*" (p. 18), i.e. it is the understanding that we are fundamentally historical beings. This distinguishes us from Nature. The meaning of our action, of our existence, is linked to history. Through this meaning, history lives through me and the meaning of my existence comes from history[1]. When I am able to justify my action through a reference to history, this is a positive appropriation, for example I might say "Cleopatra would have done the same in this situation" or in politics "this is the way Lincoln would have handled the conflict". I understand my being through the being of past characters, like Shakespeare in his historical plays, from *Anthony and Cleopatra* to *Richard II*. The question of the present being is linked to and understanding of the past and the interest in gaining such an understanding prompts the human mind "*inquire into its own historicity*" (p. 18). By doing that, I can come to understand the different possibilities of existence that the historical characters may have had. The phenomenological mission of historiography is to "*disclose the silent power of the possible*" (p. 360) in order to reveal the possible existences compared to the one that finally occurred. Historicity understands the past "*in terms of its possibility*" (p. 360). According to Heidegger, *"Understanding signifies self-projection"* (p. 357) [2], it is a self-projection towards its "potentiality of existence" (p. 360)[3] In this situation, I am an "inquiring being"[4], I am authentic towards myself because this is the being that I am in each case, but who however keeps on investigating my possibilities of existence.[5] Therefore, historicity makes "*the universal manifest in what is unique*" (p. 360). The past is unique, in the sense that it will not happen again. However, historicity goes well beyond "re-enactment" or "re-thinking of an event through a trace". In the two previous approaches, re-enactment and embodiment historiography, the past is still outside me. They lack the commitment of the self and do not help me to understand myself. They do not give meaning to my existence. In contrast, historicity reveals universal elements of the conditions of human existence. Because I can come to understand what is universal in a specific situation through self-projection into the possibilities of existence of a past character. This projection helps to understand myself as historically constituted. In addition, as a human being, I am also able to "make history", or, at least, my own history through heroic actions, for example help a person in an emergency or grasping an opportunity "to make a difference" for the future.

5- INTERPRETIVE AND PHENOMENOLOGICAL EVALUATION OF CULTURAL HERITAGE SYSTEMS

The key question now is how it is possible to capture the essence of the previous discussion of interpretive and phenomenological archaeology (Holtorf and Karlsson, 2000; Tilley, 1993, 1994) in a manageable set of evaluation criteria, which in turn can guide both user requirements elicitation and e-HS evaluation. The three principal theory contributions of interpretive archaeology trends were re-enactment, embodiment, and hermeneutics. In its most recent discussion, the concept of phenomenology also appears, albeit without its application to concrete issues as were outlined earlier with regard to

[1] Historicity allows a *"positive return to the past possible – in the sense of its productive appropriation"* (p. 19).
[2] "*Understanding signifies self-projection upon the actual possibility of being-in-the-world"* (p. 357)
[3] Historiography "*projects Dasein that has-been-there upon it ownmost potentiality-of-existence"* (p. 360).
[4] That Heidegger calls "Dasein", usually translated by "to be here", or "presence"
[5] the "*being which we ourselves in each case are and which includes inquiry among the possibilities of its being"* (p. 6).

Digicult 2002. Therefore here we have taken the phenomenological foundations one step further by building explicitly on Heidegger's concept of historicity. The implications of our analysis for e-HS evaluation are summarized in table 1.

Criteria	Question for IS evaluation (e-Heritage Systems)
1. Re-enactment	Does the e-HS help the visitors to re-live the historical events in their mind? Does it help them to picture themselves as part of the historical events? Can they grasp the mindset of the historical characters?
2. Embodiment	Does the e-HS give an opportunity of a bodily experience of the past to the visitors?
3. Context	Does the e-HS give an occasion for a "reflexive experience of history"? Which pre-understandings (intuitions) does the e-HS interface presume and does it provide tutorial aids to acquire the necessary background knowledge? Does it lead the user to engage in hermeneutic circles, which reduce the distance between the present and the past contexts of understanding?
4. Self-projection	How does the e-HS stimulate the visitors to project themselves into in the past so that the past gives meaning to their current conditions of existence?
5. Possibilities of being	Does the e-HS present the past "in terms of its many possibilities" so that the visitor is lead to wonder what specific historical characters could have done and what the constraints of their situation were?
6. Historical self	How does the e-HS help the visitors understand themselves as historically constituted so that they can learn the possible meanings of their existence from the values, actions and life situations of historical characters?
7. Inquiring being	Does the e-HS give an opportunity to the visitor to reflect "alternative modes of being", e.g. by investigating his or her own possibilities of existence or does the current era afford the kind of life that corresponds to what he or she feels is true and right?
8. Universality in uniqueness	Does the e-HS identify for the visitors how to see "the universal in what is historically unique" and thereby help them to see alternative possibilities for their own existence in the present?

Table 1. An Interpretive and Phenomenological Framework for the Evaluation of e-Heritage Systems

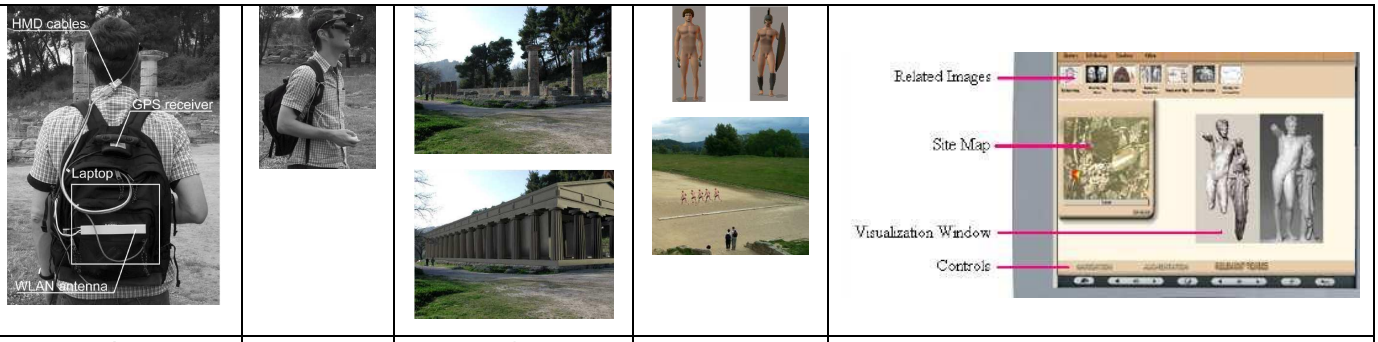
These criteria can find some, but not complete justification in the user requirements identified by the European Commission in the Digicult report. The willingness to build "applications to be user friendly" and to have "core information written simply and accessibly" might be understood in the light of re-enactment, contextualization and self-projection. Only user friendly applications and an accessible language style can help the user to 're-enact", and maybe to "get into" the historical matter. The requirement for "processes rather than static artefacts" might be linked not only the re-enactment, but also to self-projection, because history is not only about interpretation of objects, but also about understanding action through self-involvement. "Increased interactivity" may be related to the "inquiring being", because depending on the E-HS capabilities, this inquiry might search for "possibilities of existence" and maybe even a "historical self". The phrase of "richer imaginative experiences" is also clearly linked to the inquiring being and may contribute to the "historical self".

6- PHENOMENOLOGICAL EVALUATION OF THE ARCHEOGUIDE SYSTEM IN OLYMPIA

The European Commission, through the DIGICULT report, focuses especially on two ICT for cultural heritage: Virtual Reality (VR) and mobile technologies .We selected here a Mobile Computing Augmented Reality (MAR) that is one of the most broadly quoted in the European reports and in the IT for archaeology research: the ARCHEOGUIDE system in Olympia (Gleue and Dähne, 2001; Vlahakis *et al*, 2001, ACM - VAST 01, 2001). This system will be presented in a first sub-section. An evaluation will be provided in a second sub-section.

The ARCHEOGUIDE system in Olympia

ARCHEOGUIDE is a European IST (Information Society Technology) project, aiming at providing a personalized electronic guide and tour assistant to cultural site visitors including GPS, WLAN, 3D binoculars and a portable laptop (fig. 1 A and 2B).



A	B	C	D	E

Figure 1. The ARCHEOGUIDE system in Olympia

The system provides on-site help and Augmented Reality reconstructions of ancient ruins, based on user's position and orientation in the cultural site, and real-time image rendering (fig. 1 C). Digital 3D characters (avatars) of ancient Greek athletes in augmented reality are playing different sports, e.g. racing (fig. 1 D). Finally the system incorporates a multimedia database of cultural material for wireless on-line access to cultural data, virtual visits, and restoration information. It uses multi-modal user interfaces, called Mobile Unit (MU) and personalizes the flow of information to its user's profile in order to cater for both professional and recreational users. There is also a personal audio narration (fig 1 E).

Evaluation with the framework.

The context in ARCHEOGUIDE becomes not only temples in immersive 3D but also avatars (3D animated characters). However, this context is limited to representations. There is no reflexive experience of history. In ARCHEOGUIDE, there is a limited pre-understanding through personalization and a limited hermeneutic circle through inquiries. It misses maps, chronologies, information about the way people lived or about the relationships with other peoples. The historical agents are limited to the avatars. There is no re-enactment of an historical event. No doubt that there is here an immersive context. However, is it a reflexive experience of history? Of course there is a representation, but this representation is not a re-enactment because there is no historical event. There is just a landscape with temples and avatars playing mechanically the Olympic sports. Once again, the system does not allow the visitor to think himself into any action because there is no historical action. There is however a bodily experience through the immersion in Augmented Reality. The pre-understanding is assumed here because there is a customization of the system for both professional and recreational users. The hermeneutic circle seems to be present here through the comparison of the actual landscape and the virtual temple and avatars represented. But an hermeneutic circle is not a representation. It is an understanding of the part through the whole and the whole through the part. The whole would be here maps of the Hellenic world, chronologies, information about the way people lived or about the relationships with other peoples around the Greek realm. Once again, the there is no other historical agents than the avatars, who seem to have no other function than to simulate the ancient sports without any subjective thinking of any real historical athlete.

On the phenomenological side, does "immersion" means "self-projection"? The "immersion" that the Augmented Reality system allows is simply to let us see the temples as they were supposed to be and some artefacts performing physical exercises. Where is the meaning? Do we ever learn that the Olympic games were created according to the mythology by Hercules, then perpetuated by the Gemini. That these kind of games were played in front of Troy as the Iliad tells us? Do we feel the stakes between Athens and the allied cities against the Persians in the Delos league? This immersion is not a self-projection. Nowhere, the condition, the situation, the possibilities of the ancient Greek athlete is described from inside. We see them running. That's all. We do not get into their thinking or their feeling. Therefore, we cannot project ourselves in the past existence so that the past existence gives meaning to ours. We do not understand the past "in terms of its possibility" because we cannot wonder what historical characters could have done, its constraints, its situation. We do not understand

ourselves as historical. Nor we become "inquiring being" or see the "universal in what is unique" because we have not access to the constraints of the situation nor to the possibilities of existence (Table 2).

Criteria	ARCHEOGUIDE in Olympia
1. Re-enactment	Limited: Digital 3D characters (avatars) of ancient Greek athletes in augmented reality. Personal audio narration
2. Embodiment	Partly developed: Augmented Reality binoculars with 3D virtual temples and avatars
3. Context	Limited: Mobile augmented reality digital guide for outdoor archaeological site with 3D virtual temples. Limited pre-understanding through Mobile Unit queries. Limited hermeneutic circle.
4. Self-projection	Limited to reconstitutions of historical buildings and scenes in physical or virtual models and using avatars to represent hypothetical historical characters acting in the reconstitutes scenes.
5.Possibilities of being	No
6. Historical self	No
7. Inquiring being	No
8. Universality in uniqueness	No

Table 2. Evaluation of the ARCHEOGUIDE system

Therefore, this e-Heritage system could not claim to be an Interpretive Archaeology System

7- CONCLUSION

The purpose of this paper was to propose a framework for the analysis of the users expectations based on interpretive and phenomenological perspective. This theoretical ground allowed us to outline an appropriate research framework for addressing the evaluation of e-HS from the perspective of the users that would include both the insights from interpretive archaeology and interpretive IS research. We applied this framework to the study of an e-Heritage System: ARCHEOGUIDE in Olympia. It appears that this e-HS is currently not sufficiently informed by the philosophy of hermeneutics and phenomenology, and therefore it does not meet the criteria for being considered as an "Interpretive archaeology system".

One of the obvious limitations of this paper is the lack of discussion about design of interpretive archaeology systems. What kind of IS development methods could be used in order to develop such systems that would fulfil the expectations of cultural heritage visitors? Another limitation is the lack of epistemological discussion about subjectivity (Burrell and Morgan, 1979) and the link with interpretive field studies evaluation framework (Klein and Myers, 1999). These research directions will be investigated in the future. However, one principal reason for this conclusion is that archaeology as a science in general shrinks from interpreting isolated facts in a larger context, which would necessarily involve many speculative elements reaching beyond established "historical artefacts". One of the reasons for this hesitancy is that the methods of archaeology are not grounded on its most natural and pertinent philosophical foundation, i.e the interpretive philosophies of hermeneutics and phenomenology. Once interpretivism is accepted as a solid foundation for archaeological upstream research, it would only be a small step to point out how this could help to meet user expectations for interpreting archaeological findings for a broader audience "downstream". Good downstream interpretations in turn are then the prerequisite for developing computer applications that make sense to both archaeological experts and a generally educated public. In future work we shall expand this line of work to include the importance of Heidegger's phenomenology for complementing the "hermeneutical mission" of archaeology. This should include the important function of good e-HS interpretation of the world heritage systems for political democracy at a global scale.

REFERENCES

1. ACM - VAST 01 (2001). *Virtual reality, Archaeology, and cultural heritage*, ACM Press, NY
2. Boland, R. J. (1995). "Perspective Making and Perspective Taking in Communities of Knowing". *Organization Science*. Vol. 6. n°4. pp. 350-370
3. Boland, R. J. (1985). "Phenomenology : A Preferred Approach to Research in Information Systems" . In Mumford, E., Hirschheim, R, Fitzgerald, G. et Wood-Harper, T. (eds.). *Research Methods in Information Systems*. North-Holland. Amsterdam. p. 193-202.
4. Burrell, G. and Morgan, G. (1979) Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life, Heinemann, London, UK.
5. *CAA - Computer Applications to Archaeology* 2004, In Proceedings of the CAA - Computer Applications to Archaeology 2004 – Prato, Italy.
6. Cass, K. (1997) The World-Wide Web's Shadow of Opportunity: A Heideggerian Perspective of Authenticity in the Information Age , *AMCIS*
7. Collingwood, R. G. (1946). *The Idea of History*. Oxford University Press.
8. Digicult 2002, *Technological landscapes for tomorrow´s cultural economy Unlocking the value of cultural heritage*. Office for Official Publications of the European Communities. Luxembourg
9. Gleue, T. and Dähne, P. (2001). „Design and Implementation of a Mobile Device for Outdoor Augmented Reality in the ARCHEOGUIDE Project". *In ACM - VAST 01 conference* pp. 161 – 168, ACM Press, NY
10. Fride, E. (1985), "Archaeology". In *Encyclopaedia Britannica*.
11. Haynes, J.D. (1999) "Phenomenological Aspects of Churchman's Hegelian Inquiring System", *AMCIS*
12. Haynes, J.D. (2002) "Churchman, Heidegger, and Phenomenology: A Basis for a Heideggerian Inquiring System", *AMCIS*
13. Heussi, K. (1932) *Die Krisis des Historismus*, Tubigen, J C B Mohr
14. Heidegger, M. (1996). *Being and Time*, State University of NY (1953 for the original German edition).
15. Hodder and Hutson, (2003). *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge University Press.
16. Holtorf, C. and Karlsson, H. (Eds). (2000). *Philosophy and Archaeological Practice: perspectives for the 21st Century*. Bricoleur Press. Goteborg.
17. Introna, L. (2002), "The Question Concerning Information Technology: Thinking with Heidegger on the Essence of Information Technology", Chapter XIV, in Haynes John D (Editor) *Internet Management Issues: a Global Perspective*, Idea Group Publishing, .
18. Klein, H. K. and Myers, M. D. (1999) A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems, MIS Quarterly, 23(1), 67-93.
19. Leboeuf, D. (2004). "Heritage Communication through New Media in a Museum Context" *CAA* 2004 – Prato, Italy, p. 14.
20. Markus, M. L., and Robey, D. (1988) « information technology and organizational change : causal structure in theory and research ». *Management Science*, 34 : 583 - 598
21. Merleau-Ponty, M. (1962). Phenomenology of Perception. Routledge. London.
22. Plentickx, D. (2004). "Museums and Public Archaeology Applications". *In Proceedings of the CAA 2004* – Prato, Italy, p. 14.
23. Ranke , L. (1957) *Fursten und Volker : Geschichten der romanischen und germanischen*. Wiesbden: Willy Andreas
24. Thomas, J. (Ed.). (2000). *Interpretive Archaeology: A Reader*. Leicester Press University. Leicester.
25. Tilley, C. (1993). *Interpretive Archaeology*. Berg. Oxford.
26. Tilley, C. (1994). *A Phenomenology of Landscape: Places, Paths and Monuments*. Berg. Oxford.
27. Vlahakiset al (2001). "ARCHEOGUIDE". In VAST 01 conference ACM Press, NY
28. White, L. (1959), *The evolution of culture*, Mc Graw-Hill, NY